SECTION 31 4300

CONCRETE RAISING

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LANL MASTER SPECIFICATION

When editing to suit project, author shall add job-specific requirements and delete only those portions that in no way apply to the activity (e.g., a component that does not apply). To seek a variance from applicable requirements, contact the ESM Structural POC.

When assembling a specification package, include applicable specifications from all Divisions, especially Division 1, General Requirements.

Delete information within “stars” during editing.

Specification developed for ML-3 projects. For ML-1 / ML-2, additional requirements and QA reviews are required.

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PART 1 GENERAL

1.1 SECTION INCLUDES

A. Provisions to raise and support the existing slab to level by drilling and injecting grout under the sagged areas of the slab.

1.2 MEASUREMENT AND PAYMENT

A. Measurement

1. The method of measurement for slab jacking is the number of cubic yards of slurry grout mixture completed and accepted in the work.

B. Basis of Payment

1. The accepted quantities, as determined above, will be paid for at the contract price per unit of measurement, respectively, for each of the particular pay items listed below that is shown in the bid schedule for which prices and payment will be full compensation for the work prescribed including clean-up, disposal, and mobilization.

Pay Item	Pay Unit
Slab Leveling (slab jacking)	Cubic Yards

1.3 SUBMITTALS

A. Submit the following in accordance with the requirements of Section 01 3300, Submittal Procedures:

1. Mix proportions as noted in paragraph 3.4.

PART 2 PRODUCTS

2.1 SLAB JACKING MATERIALS

A. Use grout for slab jacking, consisting of a mixture of Portland Cement and water, with or without sand and other bulk fillers, together with admixtures that may be necessary or desirable to accomplish the work required in these specifications.

B. Portland Cement: Conform to ASTM C150.

C. Use additives for improving intrusion characteristics in confomance with the Federal Highway Project (FP-85), Corps of Engineers specifications, ASTM or AASHTO. "Grout Fluidifier" manufactured by Concrete Chemicals Company of Cleveland, Ohio is acceptable. “Grout Fluidifier” inhibits early stiffening, decreases bleeding, eliminates shrinkage, and increases fluidity.

D. Use water that is fresh, clean, and free from deleterious quantities of oil, acid, alkali, salts, organic matter, or similar substances.

E. Use fine aggregates and/or bulk fillers consisting of sand, silt, clay, or a combination of these materials in conformance with Federal Highway Project, FP-85, Section 502, or Corps of Engineers CW-03362.

PART 3 EXECUTION

3.1 MONITORING

Monitor the structures subjected to slab jacking operations to avoid undesirable vertical displacement and to control pressure induced movement. Establish string lines blocked up from the slab high points to monitor movement.

3.2 SLAB JACKING PROCEDURES

A. Drilling Holes

1. Drill grout injection holes, vertical, round, and not larger than 2 inches in diameter, in a preplanned pattern. Drill holes in a manner that will prevent break out at the bottom of the slab.

2. Holes may be briefly washed to create a small cavity underneath the slab, allowing initial spread of grout.

B. Use an expanding rubber packer or hose providing positive seal connected to the discharge hose. Do not extend the discharge end of the packer or hose below the lower surface of the concrete slab. When jacking the reinforced concrete slab, perform the pumping in a pattern and in the amount required to raise the concrete slab to within 0.05 foot of level. Do not allow loss of grout through cracks, joints, edges of foundation or losses from back pressure.

C. Return any slab raised above the specified tolerances back to by a method

approved by LANL.

D. Upon completion of the jacking, seal all drill holes flush with the surface of the slab with an accelerated setting sand/cement mixture or other approved material.

3.3 EQUIPMENT

A. Use only approved mixing and pumping equipment (including the items described below) in the preparation and handling of grout. Remove all oil or other rust inhibitors from the mixing drums, stirring mechanisms, and other portions of the equipment in contact with grout before the mixers are used. Equipment includes, but is not be limited to, the following items:

1. Specially equipped grout pump capable of operating at a minimum discharge pressure of 100 psi or as required by site conditions.

2. A power operated grout mixer specifically designed for the proper mixing of pumpable slurry together with a mechanically agitated slump, if necessary, to maintain uninterrupted grout supply.

3. Valves, pressure gauges, pressure hoses, supply lines, and small tools, as required to insure a continuous supply of grout under accurately controlled pressure.

B. Maintain additional equipment, parts, and supplies necessary to insure that grouting procedures will continue with minimal interruptions due to equipment failure.

3.4 MIX PROPORTIONS

A. Measure materials by volume, weight, or other approved means. Add sand or bulk filler to the mixture as warranted to enhance confinement of the grout under pressure if approved by LANL. Submit to LANL records of pumping time, pressures, volume, locations, and slumps.

B. Adjust the grout mix proportions for each point of injection and for each new batch of grout, as required, to obtain and maintain optimum grouting performance.

END OF SECTION

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Do not delete the following reference information:

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FOR LANL USE ONLY

This project specification is based on LANL Master Specification 31 4300 Rev. 0, dated January 6, 2006.